

Building Energy Rating and Labeling

Policy Summary: The current real estate market operates without the explicit consideration of energy performance of the property—a significant factor in future operating costs. Potential building owners or tenants of either residential or commercial buildings make major investments without the ability to compare the energy performance of the buildings they are interested in. This policy would address this market barrier by introducing an energy rating program designed to facilitate “apples-to-apples” comparisons between buildings, i.e., the buildings equivalent of the EPA MPG rating on cars and light trucks. This policy complements existing efforts to track actual energy use through utility billing data, but the energy ratings provided through this policy would be based on the physical characteristics of the building (e.g., level of insulation, efficiency of the HVAC system), and are intended to be independent of tenant or user behavior. Such ratings are known as “asset” ratings. The Massachusetts Department of Energy Resources (DOER) implemented pilot programs from 2012 to 2014 that provided “asset ratings” for both residential and commercial buildings in collaboration with the Mass Save programs.

Clean Energy Economy Impacts: Building energy labeling is anticipated to enable significant additional investments in energy efficiency as a path to identify energy savings opportunities in buildings. This investment in turn leads to large reductions in fuel expenses, and creates and supports clean energy jobs in residential and commercial remodeling and construction. Less spending on imported fuel will keep more money in the state economy and thereby create additional jobs.

Rationale: At present, the market is providing a glimpse of the potential for an “MPG rating” for buildings. Boston and Cambridge have implemented building energy disclosure ordinances that require commercial buildings to share annual energy use data with the city via Portfolio Manager, and the city then makes this information publicly available. However, this data reflect the energy usage of a building, and does not reflect the building assets or identify energy savings opportunities.

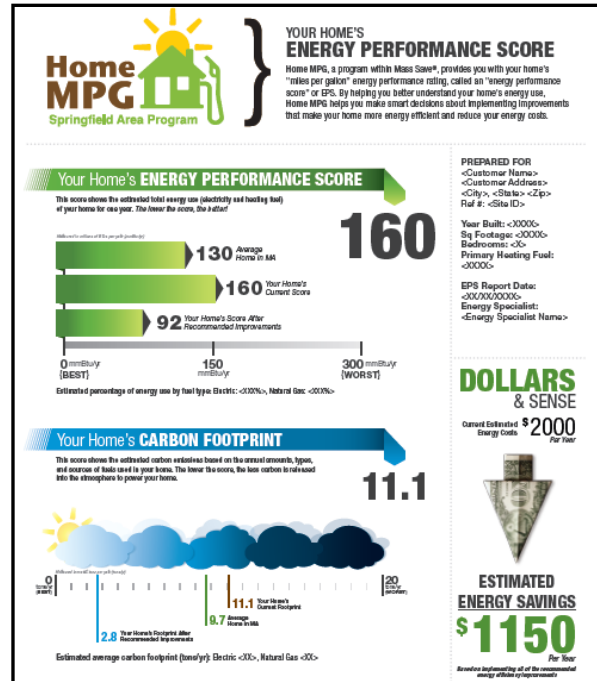
A similar story is apparent for the residential market. The use of home energy scorecards is gaining traction nationally within both state energy efficiency programs and the real estate industry. At the time of this writing, several states, including Vermont, Connecticut, Rhode Island, New York, New Jersey, and Oregon, are implementing scorecards. The Federal Housing Authority (FHA) recently announced that buyers of homes with an above-average energy score (measured by Department of Energy’s (DOE) “home energy score”) will be eligible for a slightly higher loan amount as compared to buyers of average or below average homes.

Design Issues: Any energy benchmarking and rating metric needs to be clear, transparent, and trusted if it is to support increased energy efficiency investment. However, residential and commercial real estate markets face different design issues. For the relatively homogenous residential market, a comparison of total annual energy needs (based primarily on heating and standardized electric plug loads) is likely to be the most intuitive metric. As shown below, the total annual home energy needs (expressed in MMBtu) was the primary metric on the energy

performance scorecard piloted in Home MPG. The scorecard also included the home's source-based carbon footprint, expressed as tons of CO₂ emissions. The scorecard presented these metrics for the home in its current state, as well as the expected metrics if recommended efficiency improvements were made and a comparison to the average home in the pilot communities.

For the more diverse commercial real estate market, an accurate comparison of energy needs per square foot (primarily heating, cooling, ventilation, lighting and plug loads in office/retail/lab spaces) is the generally accepted metric.

The DOER, in collaboration with a public and private sector team, undertook a pilot program for commercial asset rating focused specifically on office buildings in Eastern Massachusetts.



GHG Impact: The GHG impact for this policy is indirect, in that it enables larger and more targeted energy efficiency investments in the covered real estate markets. Two major constraints to energy efficiency investment are the lack of awareness and identification of potential savings, and the lack of credible metrics to support financing from lenders, including lenders that follow the FHA's recent decision to make buyers of homes with an above-average energy score (measured by DOE's "home energy score") eligible for a slightly higher loan amount as compared to buyers of average or below average homes. This policy tackles both of these market failures, and enables smarter real-estate investment decisions.

Costs: The primary costs of energy asset rating and labeling programs is in the initial building assessments. The groundwork laid by the recent pilot programs implemented by the Commonwealth will reduce implementation costs associated with any broader statewide deployment.

In the commercial sector, DOER's Building Asset Rating (BAR) program found that whole building energy assessments done using streamlined energy modeling methods can be done at one-quarter to one-third of the cost as a traditional ASHRAE level 2 audit, with comparable results. In Home MPG, important strides were made regarding the capability of energy audit software to generate scorecards.

Potential Next Steps: The Commonwealth may opt to put such a requirement in legislation in order to provide longer term certainty for investors and businesses in the real estate marketplace. In fact, there is currently proposed legislation to incorporate home energy ratings

into the Mass Save program, and to encourage integrating home energy rating and labeling into the residential real estate process.

Implementation Issues: If energy labeling pilot programs are subsequently expanded to a statewide level, having a large number of existing buildings to assess means that it will necessarily take many years to fully implement this policy. As a result, the timing of market coverage will likely vary in different market segments and different geographic areas around the Commonwealth.